

INCINERATOR WITH AN AIR DISTRIBUTOR MOUNTED IN A
FURNACE THEREOF

BACKGROUND OF THE INVENTION

1. Field of the invention

5 This invention relates to an incinerator with an air distributor mounted in a furnace thereof.

2. Description of the related art

Conventional incinerators for incinerating agricultural solid wastes, such as rice hulls, normally include a furnace, and an air supply for delivering air into a combustion chamber in the furnace for combustion of the solid wastes. The combustion chamber normally includes a primary combustion chamber and a secondary combustion chamber for completely burning the combustion gases that result from the combustion of the solid wastes in the primary combustion chamber. The conventional incinerator is disadvantageous in that non-uniform air distribution tends to occur in the secondary combustion chamber, which results in incomplete burning of the combustion gases and which can produce undesired smoke and pollute the environment.

SUMMARY OF THE INVENTION

Therefore, the object of the present invention is to provide an incinerator that is capable of overcoming the aforesaid drawback of the prior art.

According to the present invention, there is

provided an incinerator that comprises: a furnace that defines a combustion chamber therein; a feed supply adapted for containing solid wastes therein; a feed-delivering conduit connected to the feed supply and the furnace so as to permit delivery of the solid wastes into the combustion chamber; an air supply connected to the furnace for supplying air into the combustion chamber; and an air distributor that is disposed in the combustion chamber, that is connected to the air supply, and that has an elongated segment which extends in a longitudinal direction the same as a flow direction of combustion gases in the combustion chamber, and which is formed with a plurality of spaced apart holes distributed along the longitudinal direction. Each of the holes opens in a transverse direction relative to the longitudinal direction so as to permit uniform distribution of air into the combustion chamber.

BRIEF DESCRIPTION OF THE DRAWINGS

In drawings which illustrate embodiments of the invention,

Fig. 1 is a schematic partly sectional view of the first preferred embodiment of an incinerator according to the present invention;

Fig. 2 is a schematic fragmentary top sectional view to illustrate how air is distributed through an air distributor in a furnace of the incinerator of

Fig. 1;

Fig. 3 is a schematic partly sectional view of the second preferred embodiment of the incinerator according to the present invention; and

5 Fig. 4 is a schematic fragmentary top sectional view to illustrate how air is distributed through an air distributor in a furnace of the incinerator of Fig. 3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

10 For the sake of brevity, like elements are denoted by the same reference numerals throughout the disclosure.

Figs. 1 and 2 illustrate the first preferred embodiment of an incinerator for incinerating
15 agricultural solid wastes, such as rice hulls, according to this invention. The incinerator includes: a furnace 1 that defines a combustion chamber 11 therein and a center line (X); a heat-insulating shield 5 surrounding and spaced apart from the furnace
20 1; a feed supply 2 including a hopper 21 for containing the solid wastes therein, and a feed blower 23 for delivering the solid wastes; a feed-delivering conduit 22 connected to the hopper 21 and the furnace 1 so as to permit delivery of the solid wastes into
25 the combustion chamber 11; an air supply 3 connected to the furnace 1 for supplying air into the combustion chamber 11, and including an air blower 33 and an air

conduit 31 that is connected to the air blower 33 and the furnace 1; an air distributor 4 that is disposed in the combustion chamber 11, that is connected to the air supply 3, and that is in the form of an L-shaped pipe, the air distributor 4 having an elongated segment 41 which extends in a longitudinal direction the same as a flow direction of combustion gases in the combustion chamber 11, which has top and bottom ends, and which is formed with a plurality of spaced apart holes 40 distributed along the longitudinal direction. Preferably, the elongated segment 41 of the air distributor 4 extends along the center line (X) of the furnace 1. Each of the holes 40 in the elongated segment 41 of the air distributor 4 opens in a transverse direction relative to the longitudinal direction so as to permit uniform distribution of air into the combustion chamber 11. The air distributor 4 further has a transverse segment 42 that extends from the bottom end of the longitudinal segment 41 in the transverse direction to connect with the air conduit 31.

The feed-delivering conduit 22 has a laterally extending segment 220 that extends in the transverse direction through the furnace wall 1, and that has a feed-discharging end 221 disposed in the combustion chamber 11 and opening downwardly. The transverse segment 42 of the air distributor 4 is disposed above

the feed-discharging end 221. The elongated segment 41 of the air distributor 4 extends upwardly from the transverse segment 42 in the longitudinal direction away from the feed-discharging end 221 of the laterally extending segment 220 of the feed-delivering conduit 22.

A waste-supporting rack 12 is mounted in a lower end of the combustion chamber 11 for holding the solid wastes falling from the feed-discharging end 221 of the laterally extending segment 220 of the feed-delivering conduit 22. The furnace 1 is formed with spaced apart first, second, and third air inlets 311, 312, 313 which are connected to the air conduit 31. The first air inlet 311 is disposed at an elevation substantially the same as that of the top end of the elongated segment 41 of the air distributor 4. The second air inlet 312 is disposed at an elevation below the feed-discharging end 221 of the laterally extending segment 220 of the feed-delivering conduit 22. The combustion gases resulting from burning of the solid wastes flow upwardly from the waste-supporting rack 12 into the region where the air distributor 4 is located to mix with air that exits from the air distributor 4 so as to undergo a secondary combustion and so as to permit complete burning thereof.

Figs. 3 and 4 illustrate the second preferred

embodiment of the incinerator according to the present invention. The incinerator of this embodiment differs from the previous embodiment in that the air supply 3 includes first and second air blowers 34, 5 35. The transverse segment 42 of the air distributor 4 is directly connected to the first air blower 34. An air conduit 31 is connected to the furnace 1 and the second air blower 35.

With the inclusion of the air distributor 4 in 10 the combustion chamber 11 in the furnace 1 of the incinerator of this invention, the drawback as encountered in the prior art can be eliminated.

With the invention thus explained, it is apparent that various modifications and variations 15 can be made without departing from the spirit of the present invention.